

We claim:

1. A release-paper backing, comprising a network of fibers and a yellow and/or red dye, the release-paper backing having a light transmission between about 40% and about 80% at a wavelength of about 680 nm, and having at least one major surface configured to support a release coating.
2. The release-paper backing of claim 1, comprising a yellow dye.
3. The release-paper backing of claim 1, having a light transmission between about 50% and about 80% at a wavelength of about 680 nm.
4. The release-paper backing of claim 1, having a Gurley density between about 4,000 seconds and about 10,000 seconds.
5. The release-paper backing of claim 1, having a Gurley density between about 4,000 seconds and about 8,000 seconds.
6. The release-paper backing of claim 1, having a positive  $b^*$  value on the International Commission on Illumination  $L^*a^*b^*$  scale.
7. The release-paper backing of claim 1, having a  $b^*$  value between about +6.0 and about +20 on the International Commission on Illumination  $L^*a^*b^*$  scale.
8. The release-paper backing of claim 1, wherein the yellow and/or red dye is distributed throughout the network of fibers.
9. The release-paper backing of claim 1, wherein the network of fibers is within a core sheet and further comprising a first coating on a first major surface of the core sheet and a second coating on a second major surface of the core sheet, wherein the first coating is configured to support the release coating, and the first coating comprises clay.

10. The release-paper backing of claim 9, wherein the first coating comprises between about 60% and about 80% clay.

5 11. The release-paper backing of claim 9, wherein the first coating further comprises starch, starch-like material, latex or a combination thereof.

12. The release-paper backing of claim 9, wherein the first coating further comprises starch or starch-like material and a crosslinking agent.

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13. The release-paper backing of claim 9, wherein the second coating comprises starch and/or starch-like material and the starch and/or starch-like material substantially penetrates the core sheet to increase an ability of the release-paper backing to transmit light.

15 14. A release-paper backing, having a  $b^*$  value between about +6.0 and about +20 on the International Commission on Illumination  $L^*a^*b^*$  scale, having a light transmission between about 40% and about 80% at a wavelength of about 680 nm, and having at least one major surface configured to support a release coating.

20 15. The release-paper backing of claim 14, comprising a yellow dye.

16. The release-paper backing of claim 14, comprising a red dye.

17. The release-paper backing of claim 14, having a Gurley density between  
25 about 4,000 seconds and about 10,000 seconds.

18. A release-paper backing, comprising:  
a core sheet comprising a network of fibers;  
a first coating positioned on a first major surface of the core sheet and configured to  
30 support a release coating; and

light transmission increasing means for increasing an ability of the core sheet, the first coating and any applied release coating to transmit light therethrough, the light transmission increasing means being added to or applied on the core sheet.

5           19.     The release-paper backing of claim 18, having a light transmission between about 40% and about 80% at a wavelength of about 680 nm.

          20.     The release-paper backing of claim 18, having a Gurley density between about 4,000 seconds and about 10,000 seconds.

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          21.     A release-paper backing, comprising:  
a network of fibers; and

a dye configured to increase an ability of the release-paper backing to transmit light, wherein the release-paper backing has at least one major surface configured to support a release coating.

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          22.     The release-paper backing of claim 21, wherein the dye is configured to increase the ability of the release-paper backing to transmit light generated by a red LED, a green LED, a blue LED, a white LED or a combination thereof.

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          23.     A release paper that provides high contrast during optical sensing operations, comprising a release coating and a release-paper backing, wherein the release-paper backing comprises a network of fibers and a yellow or red dye.

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          24.     The release paper of claim 23, comprising a yellow dye.

          25.     The release paper of claim 23, having a light transmission between about 40% and about 80% at a wavelength of about 680 nm.

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          26.     The release paper of claim 23, having a light transmission between about 50% and about 80% at a wavelength of about 680 nm.

27. The release paper of claim 23, having a Gurley density between about 4,000 seconds and about 10,000 seconds.

5        28. The release paper of claim 23, having a Gurley density between about 4,000 seconds and about 8,000 seconds.

29. The release paper of claim 23, having a positive  $b^*$  value on the International Commission on Illumination  $L^*a^*b^*$  scale.

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30. The release paper of claim 23, having a  $b^*$  value between about +6.0 and about +20 on the International Commission on Illumination  $L^*a^*b^*$  scale.

31. The release paper of claim 23, wherein the yellow or red dye is distributed

15 throughout the network of fibers.

32. The release paper of claim 23, wherein the network of fibers is within a core sheet and further comprising a first coating on a first major surface of the core sheet and a second coating on a second major surface of the core sheet, wherein the first coating

20 supports the release coating, and the first coating comprises clay.

33. The release paper of claim 32, wherein the first coating comprises between about 60% and about 80% clay.

25        34. The release paper of claim 32, wherein the first coating further comprises starch, starch-like material, latex or a combination thereof.

35. The release paper of claim 32, wherein the first coating further comprises starch or starch-like material and a crosslinking agent.

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36. The release paper of claim 32, wherein the second coating comprises starch or starch-like material and the starch or starch-like material substantially penetrates the core sheet to increase an ability of the release paper to transmit light.

5 37. A contrast-improving release paper having an added dye, the added dye having a color selected to increase light transmission through the release paper thereby increasing contrast and improving performance during optical detection operations.

38. The release paper of claim 37, having a light transmission between about  
10 40% and about 80% at a wavelength of about 680 nm.

39. The release paper of claim 37, having a Gurley density between about 4,000 seconds and about 10,000 seconds.

15 40. A release paper, comprising:  
a network of fibers;  
a release coating; and  
a dye configured to increase an ability of the release paper to transmit light, the dye  
having a dye color selected to increase transmittance through the release paper, wherein the  
20 dye color is selected based, at least in part, on a color of light to which the release paper is  
subjected during optical detection operations.

41. The release paper of claim 40, wherein the dye is configured to increase the  
ability of the release paper to transmit light generated by a red LED, a green LED, a blue  
25 LED, a white LED or a combination thereof.

42. A method for making a release paper or release-paper backing, comprising:  
forming a mixture comprising a paper stock and a dye selected to increase the light  
transmission of the release paper or release-paper backing at a wavelength range generated  
30 by a red LED, a green LED, a blue LED, a white LED or a combination thereof;  
forming the mixture into a sheet;

- 24 -

applying a coating to a major surface of the sheet; and  
hot-soft calendering the sheet.

43. The method of claim 42, wherein the coating is a first coating and further  
5 comprising applying a release coating over the first coating.

44. The method of claim 42, wherein the coating is a first coating, the major  
surface is a first major surface, and further comprising applying a second coating on a  
second major surface of the sheet, wherein the second coating comprises a starch or starch-  
10 like material and the starch or starch-like material substantially penetrates into the sheet.

45. The method of claim 42, wherein hot-soft calendering comprises  
calendering at a pressure between about 500 pli and about 2000 pli.

15 46. The method of claim 42, wherein hot-soft calendering comprises hot-soft  
calendering to achieve a Gurley density between about 4,000 seconds and about 10,000  
seconds.

20 47. The method of claim 42, wherein the dye is a yellow dye.

48. The method of claim 42, wherein the dye is a red dye.

25 49. The method of claim 42, wherein the dye is a combination of yellow and red  
dye.

50. A method for making a release paper or release-paper backing configured  
for use with a particular type of light-actuated position detecting sensor having a light  
source, comprising:

30 selecting a type of sensor to be used with a release paper or release-paper backing;  
evaluating light transmission through the release paper or release-paper backing for  
the light source of the selected type of sensor; and

modifying the release paper or release-paper backing to increase light transmission through the release paper or release-paper backing, thereby increasing contrast and improving performance during optical detection operations.

- 5           51.     The method of claim 50, further comprising:  
              selecting a dye based on the effect of the dye on light transmission through the  
              release paper or release-paper backing at wavelengths emitted by the light source; and  
              incorporating the dye into at least a portion of the release paper or release-paper  
10           backing.

52.     The method of claim 51, wherein the light source is a red LED and the dye  
              is a yellow dye, a red dye or a combination thereof.